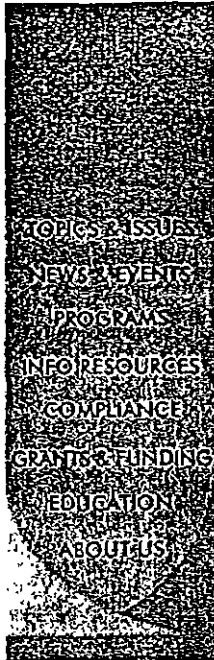


EXHIBIT 29



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EPA United States
Environmental Protection Agency

New England

Q & A Regarding Vermiculite Insulation

What phone numbers can I call if I have health or homeowner-related questions about vermiculite insulation?

EPA New England has a toll-free number - 1-888-372-7341 - for New Englanders to call with vermiculite-related questions. Interested parties from outside New England can refer to the [EPA Region Map](#) EPA HQ and click on your state for contacts in your area. Callers from New England will be referred to the Agency for Toxic Substances & Disease Registry for health questions and EPA New England's asbestos program coordinator for homeowner questions.

What is vermiculite insulation? It is an insulation product that contains a mineral called vermiculite that comes from mines in Libby, Montana and other mines across the United States and other countries.

If I have vermiculite insulation, is it possible it contains asbestos? More than 70 percent of the vermiculite ore mined in the world came from the Libby mine which has been closed since 1990. This particular mine was unusual because the area also included a natural deposit of tremolite asbestos. As a result, much of the vermiculite from the Libby mine was contaminated with tremolite asbestos.

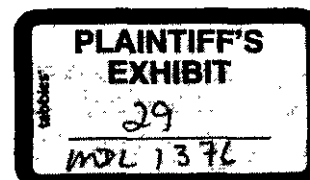
How is W.R. Grace Co. involved in this issue? W.R. Grace owned and operated the vermiculite mine in Libby. Much of the vermiculite from this mine was used in the company's Zonolite attic insulation, a product that the company sold from 1963 to 1984 when its sale by the company was discontinued.

Was Zonolite widely used? EPA estimated in 1985 that 940,000 American homes contained, or had contained, Zonolite attic fill.

If I think I might have vermiculite insulation in my home, what do you suggest I do? If you know you have vermiculite insulation in your attic or walls and you're concerned about it, it probably makes sense to test the material to see if it contains asbestos.

Can I test the material myself? If you want to have a sample analyzed, we suggest hiring a trained consultant or contractor to collect the sample and get it analyzed at a laboratory. We discourage collecting the sample yourself.

How do I find a contractor and a laboratory? There are numerous consulting companies that perform this kind of work. In Massachusetts, consultants and laboratories that analyze for



asbestos in materials and the air must be licensed by the Massachusetts Department of Labor & Workforce Development. We can provide you with a list of companies licensed by the Commonwealth to perform asbestos analytical work by calling us at 1-888-372-7341. In addition, numerous laboratories in New England participate voluntarily in a national certification program, the National Voluntary Laboratory Accreditation Program. A list of those accredited labs in each of the New England states is available by calling us at 1-888-372-7341.

If the lab is backed up and asks that we collect the material ourselves, what would your advice be? As long as you follow the contractor's specific suggestions for removing the material, it shouldn't be a problem. To minimize the potential for airborne releases from the material, samples should be wet when being collected. Using gloves and a cloth face mask are advised as well.

What if the material is found to contain asbestos? What should I do? Depending on the asbestos levels in the samples, how much vermiculite is in the house and where the material is located, you may want to consider getting your air tested just to be sure the asbestos isn't getting into the air.

If there is asbestos in the insulation, should I have it removed? Before taking that step, homeowners should consider a number of factors. First, removing asbestos-containing materials is typically very expensive. If a significant amount of material is involved, it will probably cost thousands of dollars. Secondly, due to the physical characteristics of vermiculite, there's a low potential the material is getting into the air. If the insulation is not exposed to the home environment - for example, it's sealed behind wallboards and floorboards or is isolated in the attic which is vented outside - the best advice would be to leave it alone. For a Fact Sheet on Asbestos, visit ATSDR's web page at www.atsdr.cdc.gov/tfacts61.html **EXTERNAL**.

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<http://www.epa.gov/region01/qa.html>
Last Revised: October 9, 2000

EXHIBIT 30

Environmental Fact Sheet

EPA U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 10 September 2000

ASBESTOS IN ATTIC INSULATION

As a result of recent newspaper articles, the U.S. Environmental Protection Agency (EPA) office in Seattle has received a large number of phone calls from citizens concerned about asbestos-containing insulation in their attics. EPA is working hard to gather more information about attic insulation and other products containing vermiculite that may be contaminated with asbestos.

The following information provides a common sense approach to help you find out what kind of attic insulation you have and decide what to do if you have vermiculite attic insulation.

Background

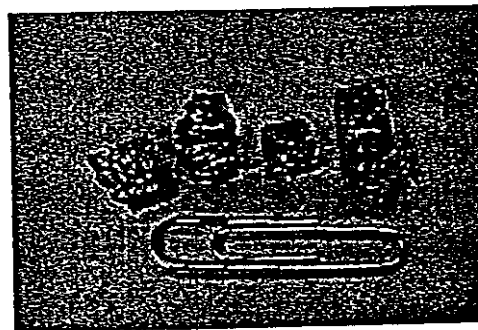
EPA believes that a number of manufacturers produced attic insulation from vermiculite. One mine in the United States produced over 70 percent of the world's vermiculite before the mine was closed in 1990. Ore from this mine is known to have asbestos contamination which contaminates any products from this ore.

Why is it a Problem?

If disturbed, the asbestos fibers in vermiculite attic insulation may get into the air. These fibers can be inhaled and become trapped in the lungs and may cause diseases such as asbestosis, lung cancer, and mesothelioma. These diseases may show up many years after exposure to asbestos.

What Does it Look Like?

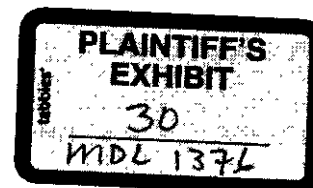
Vermiculite is a mineral that is shaped like a small nugget, and varies in color from silver-gold to gray-brown (see picture at right). The asbestos fibers contained in vermiculite attic insulation are generally too small to be seen without magnification. Only a trained technician using careful microscopic examination can see asbestos fibers.



Pieces of Vermiculite Attic Insulation

What Should I Do if I Have it?

Look at the insulation in your attic without disturbing it. If it appears you have vermiculite attic insulation in your attic, we recommend the following steps:





1. If you do not need to remodel or disturb the insulation, **LEAVE IT ALONE!** If it's sealed behind wallboards and floorboards or is isolated in an attic that is vented outside, the best approach is to keep it in place.
2. If you are concerned about asbestos contamination in the living quarters of your home, you can consider air monitoring. This will show if any asbestos has been or is being released from the insulation into the air in your home. The air monitoring must be done by trained professionals.
3. If you are planning to remodel or remove your insulation, have the insulation tested first.
 - A. EPA recommends using a trained and certified professional to conduct the tests. Use certified asbestos removal professionals to remove your vermiculite attic insulation using a "negative pressure enclosure" technique. This technique will prevent asbestos fibers and dust from escaping from your attic into the rest of your home. Using professionals is expensive. Do not attempt to do this yourself. You could spread asbestos fibers throughout your home, putting you and your family at risk of inhaling asbestos fibers.
 - B. After the vermiculite attic insulation is removed, you may want to consider having air monitoring tests done in your attic and throughout the living areas of your home. This is to ensure that the concentration of asbestos fibers in the home is low or not present.

How Do I Find a Trained and Certified Asbestos Removal Professional?

A certified asbestos inspector will be able take samples of your insulation, provide you with information on the results, and advise you on what additional tests or options you might consider. Inspectors can be found in the Yellow Pages under "Asbestos Consulting and Testing" or "Asbestos Abatement". Ask the inspector to provide you with the name of the company that trained and certified him or her. Call that company to confirm whether a particular inspector has had the required training and has up-to-date accreditation. Companies that can test the air in your home will be found under the same listings.

Where Can I Get More Information?

New information can be found on the hotline and websites below as it becomes available.

For current information on asbestos and health related information, contact EPA's TSCA Hotline at 1-202-554-1404, or visit EPA's Region 10 website at www.epa.gov/R10earth (click on Index, then Asbestos).

Also visit the federal Agency for Toxic Substances and Disease Registry (ATSDR) website at www.cdc.atsdr.gov, or the Washington State Department of Health at www.doh.wa.gov/ehp/ts.

EXHIBIT 31



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Questions and Answers

Exposure to Asbestos in Insulation

How do I know if my insulation contains asbestos?

The only sure way to know is to have insulation samples collected by a state-certified inspector and then have the samples analyzed by a state-certified testing laboratory.

Is my family at risk of exposure to asbestos if we have renovated and removed or otherwise disturbed the asbestos insulation?

Asbestos fibers are microscopic. These tiny fibers can be present in the dust in an area where asbestos insulation is disturbed. If you observed a lot of dust when removing or disturbing the asbestos, it is possible that you inhaled some asbestos fibers. Usually, however, it takes more exposure than a few trips to the attic to develop the health problems associated with exposure to asbestos.

If you are concerned about possible exposure, consult a physician who specializes in environmental or occupational medicine. It usually takes many years after an exposure for symptoms to develop; however, you should see a doctor if you develop problems breathing or notice any change in your breathing ability.

I need to have asbestos insulation removed, what should I do?

There are specialized firms that are certified in removing asbestos safely. You may be able to locate these firms through your state, county, or local health department. If you think you have asbestos insulation, do not attempt to remove it yourself.

Am I at risk if I have personally removed or handled asbestos insulation? If removing or handling the asbestos created a lot of dust, the dust may have contained tiny asbestos fibers. You could have inhaled some of those fibers.

Exposure to asbestos puts you at risk for lung diseases; that risk may be made worse by activities such as smoking. Although some people have developed severe illnesses from short-term or limited exposures, in general the greater the exposure to asbestos the greater the chance of developing health effects. If you are concerned that you may have been exposed to asbestos, you may consider visiting a physician experienced in identifying and treating asbestos exposure, such as a physician specializing in occupational and environmental medicine.

I have insulation in my attic. Will it harm me to go into the attic?

If the insulation does not contain asbestos, then there is no threat of harm from asbestos-related illnesses from exposure to it. However, many types of insulation can be irritating to the skin, nose, throat, and lungs.



Even if it contains asbestos, the insulation may not be a problem if it is in good condition. For asbestos to present a problem for the homeowner, it must be disturbed so that tiny fibers are released into the air and inhaled or ingested.

Just going into the attic without disturbing a lot of dust will probably not harm you.

Should I leave asbestos-containing insulation in my attic?

If the asbestos insulation is not fraying or breaking down and producing a lot of dust (containing free fibers), then it can remain. Asbestos insulation in good condition, left undisturbed, will not harm you.

If the insulation is producing dust, it would be wise to cover it with sheets of plastic and/or plywood. Plastic alone would be okay if you don't go into the attic often; the plywood, with its seams caulked, installed over the plastic would be better if you spend significant time there.

In the long term, it would be better for a professional to replace old asbestos insulation with more modern insulation. However, containment of the asbestos with properly installed plastic and wood is an option to delay that expense.

Some states may require that owners selling their houses inform the buyers of the asbestos in the house.

I have insulation that's quite old (more than 15 years). Is it possible that the asbestos in it could still pose a health problem?

Asbestos is a naturally occurring mineral fiber and it is unlikely to break down over time under the kinds of conditions found in a home. If there was asbestos in the insulation when it was installed, it is still there.

In fact, as the insulation gets older, it may deteriorate through normal wear and tear into the kind of tiny airborne fibers that are of concern. If this is the case, you may want to consider containment options. If the insulation is producing dust, it would be wise to cover it with sheets of plastic and/or plywood. Plastic alone would be okay if you don't go into the attic often; the plywood, with its seams caulked, installed over the plastic would be better if you spend significant time there. In the long term, it would be better for a professional to replace old asbestos insulation with more modern insulation. However, containment of the asbestos with properly installed plastic and wood is an option to delay that expense.

If you think that fibers from your attic may be getting into your living space, then you may want to consult an asbestos expert to have it evaluated and perhaps removed. You may be able to find a qualified asbestos removal contractor by contacting a regional or state industrial or homeowners contractors association or your local, county or state public health office.

I have handled rolls of insulation for years. Am I at risk for exposure?

Not all insulation is made from asbestos; insulation may be made out of fiberglass or other materials. You should first determine whether the insulation that you handled contains asbestos.

Handling rolls of insulation containing asbestos increases the chance that you have been exposed to harmful fibers.

Whether that exposure is likely to cause harmful health effects is unique to each individual. Each person's response to exposure differs and may be based upon genetic makeup and certain lifestyle activities, particularly smoking.

If you suspect that you have been exposed to asbestos fibers, especially if you think the exposure was long-term, you should consult a physician experienced in occupational and environmental medicine.

For more information about **Asbestos**, go to **ATSDR ToxFAQs™**.

For other information, contact Kathy Skipper or Mike Groult, ATSDR Office of Policy and External Affairs, at (404) 639-0501, or via e-mail at the ATSDR Press Office at ATSDRPress@cdc.gov.

This page last updated on June 28, 2000

Joanne Cox / JDCox@cdc.gov

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U.S. Department of Health and Human Services

EXHIBIT 32

1 MCGARVEY, HEBERLING, SULLIVAN & MCGARVEY, P.C.
745 South Main
2 Kalispell, MT 59901
Telephone: (406) 752-5566
3

LIEFF, CABRASER, HEIMANN & BERNSTEIN, LLP
4 Embarcadero Center West, 30th Floor
275 Battery Street
5 San Francisco, CA 94111
Telephone: (415) 956-1000
6

NESS MOTLEY LOADHOLT RICHARDSON & POOL
7 28 Bridgeside Blvd.
P.O. Box 1792
8 Mount Pleasant, SC 29465
Telephone: (843) 216-9000
9

LUKINS & ANNIS, P.S.
10 1600 Washington Trust Financial Center
717 W. Sprague Ave.
11 Spokane, WA 99201-0466
Telephone: (509) 455-9555
12

COHEN, MILSTEIN, HAUSFELD & TOLL, P.L.L.C.
13 999 Third Ave., Suite 3600
Seattle, WA 98104
14 Telephone: (206) 521-0080

UNITED STATES DISTRICT COURT
DISTRICT OF MONTANA
MISSOULA DIVISION

16
17 PAUL PRICE, JOHN PREBIL and MARGERY
PREBIL, on behalf of themselves and all others
18 similarly situated,

19 Plaintiffs,

20 vs.

21 W.R. GRACE & COMPANY (a Delaware
corporation); W.R. GRACE & COMPANY-CONN)
22 (a Connecticut corporation); W.R. GRACE & CO.,)
a/k/a GRACE, an association of business entities;)
23 SEALED AIR CORPORATION (a Delaware
corporation),)
24

25 Defendants.
26

No. CV 00-71-M-DWM

AFFIDAVIT OF RICHARD HATFIELD
IN SUPPORT OF PLAINTIFFS'
APPLICATION FOR PRELIMINARY
INJUNCTION AND EMERGENCY
NOTICE TO CLASS MEMBERS



1 STATE OF GEORGIA)
) ss.:
2 COUNTY OF FORSYTH)

3 1. Richard Hatfield being first duly sworn, deposes and states as follows:

4 2. I have personal knowledge of the facts stated herein, except were otherwise stated:

5 3. I have obtained a Bachelor of Science degree in geology from North Carolina State
6 University.

7 4. I am currently the senior asbestos consultant at Materials Analytical Services
8 (hereinafter "MAS"). Previously, I was employed by Law Engineering as Assistant Vice President
9 and Senior Corporate Consultant from December 1987 to August 1996. Prior to that, I was Director
10 of Services for McCrone Environmental Services for five (5) years.

11 5. I am currently a member of the Environmental Information Association, and have
12 served on the United States EPA Peer Review Committee and the ASTM D-22 Committee.

13 6. For more than twenty (20) years, I have consulted on issues regarding asbestos and
14 buildings, beginning around 1979 when I was a Technical Advisor to the U.S. EPA regarding its
15 "Asbestos in Schools" program.

16 7. During the last twenty (20) years, I have been involved in the assessment and testing
17 of asbestos in buildings, and have inspected hundreds of buildings for asbestos. During this time,
18 I have served as an expert witness in litigation involving asbestos in buildings, and have testified for
19 both building owners and asbestos manufacturers.

20 8. I am certified by the Environmental Protection Agency to inspect buildings for
21 asbestos-contained materials and to manage asbestos in buildings. I am also certified by NIOSH to
22 sample and evaluate airborne asbestos dust.

23 9. I have taught courses required by EPA regarding asbestos and have given numerous
24 talks at asbestos conferences regarding the assessment and evaluation of asbestos-containing
25 materials in buildings. I am appending my curriculum vitae as Attachment A.
26

1 10. I am familiar with testing performed in July 1993 by MAS in which MAS found
2 asbestos in bags of Grace's Zonolite Attic Insulation. In its report dated July 26, 1993, MAS
3 concluded that tremolite-actinolite was found to be associated with the vermiculite and as free
4 respirable fibers in the fine dust. I am appending the report as Attachment B.

5 11. In February 2000, I was hired to make a determination as to whether Grace's
6 vermiculite attic insulation in homes contained asbestos, and to conduct an assessment of whether
7 Grace's attic insulation in homes can release asbestos fibers and create an asbestos contamination
8 problem.

9 12. I collected and arranged to have analyzed bulk samples of raw vermiculite ore and
10 vermiculite that had been milled by W.R. Grace. I also collected and arranged to have analyzed bulk
11 samples of attic insulation from eleven different locations in Libby, Montana. All of these samples
12 were analyzed by Materials Analytical Services and found to contain tremolite\actinolite asbestos.
13 The results of analysis are contained in Attachment C.

14 13. In addition to collecting bulk samples, I collected and arranged to have analyzed
15 samples of settled dust in three homes with W.R. Grace's Zonolite Attic Insulation in Libby,
16 Montana. Specifically, these dust samples were collected from the homes of Walter Mason, Shelly
17 Spencer and Diane Walker. Notably, all of these samples were analyzed by Materials Analytical
18 Services and found to contain tremolite\actinolite and anthophyllite asbestos fibers. The asbestos
19 dust concentrations ranged from approximately 400,000 asbestos structures per square foot to
20 approximately 41,000,000 asbestos structures per square foot. The results of analysis are set forth
21 in Attachment D. Based on my experience and the results of this testing, it is my opinion that W.R.
22 Grace's Zonolite Attic Insulation has released asbestos fibers, which has settled on surfaces and
23 created a potential asbestos contamination hazard.

24 14. I also conducted testing to simulate renovation activities that ordinarily take
25 place in homes with W.R. Grace's Zonolite Attic Insulation. I was placed in contact with
26 Marco Barbanti, who owns rental properties with Grace's Zonolite Attic Insulation in S

1 Spokane, Washington. Mr. Barbanti explained to me in detail renovation work he had
2 previously conducted and future renovation work he planned to conduct at his rental property
3 located at 1301 West Mallon. I was placed in contact with Mr. Barbanti's handyman, Ed
4 O'Conner, who explained the procedure that he used in the past and intended to use to install
5 a bathroom heater fan in the attic of Mr. Barbanti's house. In order to access an area on top
6 of the ceiling, Mr. O'Conner would use a tin pan to scoop the vermiculite from the top of the
7 ceiling in the area where the heater fan unit was to be installed and transfer the vermiculite
8 to an area of the attic out of the way of the work activities. He then would sweep up the
9 residue dust and debris from the surface of the ceiling and placed it to the side. Until recently
10 Mr. Barbanti and his handyman were unaware of any potential asbestos hazard that W.R.
11 Grace's Zonolite Attic Insulation posed and therefore did not take any safety precautions in
12 conducting this work in the past.

13 15. The work as described above was conducted in Mr. Barbanti's attic to allow for the
14 installation of a ceiling mounted heater fan unit. The attic area was isolated from the balance of the
15 house. While the attic work was performed personal and area air samples were collected. The work
16 activities were also videotaped. A copy of the videotape is appended as Attachment E. The video
17 depicts the work as it was conducted. The lighting for the videotape was a spot light. A spotlight
18 used in this manner in a dark area created what is commonly referred to as the "Tyndall light
19 phenomena". With the aid of this type of lighting, one can see dust particulate smaller than what
20 would normally be visible with the naked eye. Most people have seen the "Tyndall light
21 phenomena" when sun light streams through a window in a darkened room and dust particulates
22 become suddenly visible. During the work activities of moving the vermiculite attic insulation air
23 samples were collected on the workers and in the attic space.

24 16. The air samples were analyzed by Materials Analytical Services and the results are
25 appended as Attachment F. The levels ranged from 6.96 str/cc to 12.48 str/cc. These levels greatly
26

1 exceed the EPA clearance level of 0.01 f/cc, the OSHA permissible exposure limit of 0.1 f/cc, and
2 OSHA's peak exposure limit of 1 f/cc in a 30 minute period.

3 17. I have reviewed reports of simulated testing of Zonolite Attic Insulation conducted
4 by Grace in the 1970s. In particular, I have reviewed Grace's testing dated March 11, 1976, July 11,
5 1976, April 27, 1979 and March 1980. The elevated asbestos airborne concentrations during the
6 testing that I performed simulating renovation activities are consistent with the elevated
7 concentrations that Grace achieved during installation.

8 18. I also collected a sample of the fine dust from the top of the ceiling below the
9 vermiculite insulation. The dust sample was analyzed by Materials Analytical Services. The results
10 of analysis indicate that the asbestos dust concentration on the surface was approximately 47,000,000
11 structures per square foot. (See Attachment G). In my opinion, the results demonstrate that the fine
12 dust from the vermiculite insulation is contaminated with asbestos. Further, in my opinion
13 disturbance of this dust will result in elevated concentrations of asbestos in the air.

14 19. Based on my testing conducted in Libby, Montana and Spokane, Washington, it is
15 my opinion to a reasonable degree of scientific certainty that Grace's Zonolite Attic Insulation
16 contains asbestos. It is also my opinion to a reasonable degree of scientific certainty that disturbance
17 of Grace's Zonolite Attic Insulation involving ordinary renovation activities, such as removing or
18 moving the vermiculite material and sweeping it up, results in dangerously high airborne
19 concentrations of asbestos fibers exceeding the EPA clearance level of 0.01 str/cc, the OSHA PEL
20 of 0.1 f/cc, and OSHA's peak or execution limit of 1 f/cc.

21 20. The OSHA permissible exposure limit ("PEL") of 0.1 f/cc, is applicable to
22 contractors working in the home. As an occupational standard, the OSHA Regulation was intended
23 to apply to healthy workers who are familiar with asbestos and the necessary precautions to minimize
24 exposure. The OSHA Regulation was not intended to apply to family members, including children
25 involved in ordinary household activities, including maintenance, repair and remodeling activities
26 in the home.

1 21. The EPA clearance level of 0.01 structures per cubic centimeters (s/cc) was intended
2 to insure proper asbestos decontamination of an area following abatement. The sampling procedure
3 involves collection of air samples while surfaces in the avated space are being aggressively disturbed
4 using a leaf blower. The EPA clearance testing recognizes the problems associated with asbestos
5 dust on surfaces and that settled dust can be reentrained and cause an exposure problem.


6 22. It is my opinion to a reasonable degree of scientific certainty that asbestos can be
7 released from Grace's Zonolite Attic Insulation and creates a contamination hazard in homes.

8 23. Based on my experience and my testing, it is my opinion that homeowners need to
9 be warned about: 1) the presence of asbestos in Zonolite Attic Insulation; 2) the potential hazards
10 associated with disturbing Zonolite Attic Insulation and asbestos dust from the insulation; 3) the
11 need for strict safety precautions when working around this material; and 4) the need for work that
12 disturbs the insulation and dust from the insulation to be conducted by persons specifically trained
13 to work around asbestos. 5) if the disturbance of the Zonolite attic insulation cannot be controlled
14 it should be removed prior to conducting additional work activities which would disturb the
15 insulation.

16 Further Affiant sayeth not.

17 
RICHARD L. HATFIELD

18
19 SUBSCRIBED AND SWORN to before me this 18 day of July, 2000.

20 
21 Notary Public in and for the State of Georgia
22 Residing at _____
My commission expires: _____

23
24 NOTARY PUBLIC, Gwinnett County, Georgia
25 My Commission Expires June 30, 2003
26

A

CURRICULUM VITAE

Richard L. Hatfield
Senior Consultant
MAS, Inc.
3945 Lakefield Court
Suwanee, Georgia 30024
Work Telephone: (770) 866-3200

EDUCATION

- 1974 Received Bachelor of Science degree; Experimental Statistics, North Carolina State University.
- 1978 Received Bachelor of Science degree; Geology, North Carolina State University.

CAREER SUMMARY

Mr. Hatfield joined Materials Analytical Services in 1996 as a Senior Consultant to perform consulting services for asbestos and other environmental and materials related problems.

Mr. Hatfield joined Law Engineering in 1978 and was assigned to the U.S. EPA's "Asbestos in Schools" program in 1979. With the completion of that program and the initial attention of building managers toward the asbestos problems, Mr. Hatfield continued to assist Law by consulting with clients and developing methods to solve asbestos problems.

In 1982, Mr. Hatfield was recruited by a prominent laboratory, McCrone Environmental, to develop and manage their Atlanta based company. Their goal was to provide quality field and laboratory services for the asbestos abatement industry. These services included building surveys, air and project monitoring, consulting, expert testimony, and extensive analytical and microscopy services. During this time, the company, McCrone Environmental Services, was recognized as a leader in the specialized fields of light and electron microscopy.

During 1987, some significant changes in the industry were made, notably the formulation of Law Associates, Inc. and its subsidiary electron microscopy laboratory, Materials Analytical Services, Inc. Later in 1987, Mr. Hatfield returned to the Law Companies Group by joining Law Associates to help develop its consulting services and assist the laboratory in the development of special analytical services.



Richard L. Hatfield
Page 2

ASBESTOS RELATED EXPERIENCE

Mr. Hatfield has been actively engaged in asbestos related services since 1979 when he served as a Technical Field Advisor for U.S. EPA's "Asbestos in Schools Program". While serving on this program, Mr. Hatfield assisted in the formulation of New York State, New Jersey and the City of New York asbestos programs. He helped with training state and local government personnel, contractors and the general public in regulations, building surveys and in work procedures associated with the discovery, control and removal of asbestos-containing materials.

Upon completion of the EPA's project, Mr. Hatfield returned to Law and began its development of asbestos related services, particularly its analytical services. Mr. Hatfield's knowledge and experience has been sought to further many other's education in dealing with asbestos-related problems. It should be noted that Mr. Hatfield's teaching experience began as a prime instructor in some of the earliest and most recognized training programs.

While directing McCrone Environmental, Mr. Hatfield began serving as an expert witness in property damage, "cost recovery" litigation. Utilizing the expertise of the microscopy laboratory, Mr. Hatfield developed procedures for the identification of asbestos-containing products and special methods for evaluation asbestos contamination in buildings. In addition to individual property damage cases, Mr. Hatfield testified at the Johns Manville Hearing for Property Damage settlements in Washington, D.C.

Upon returning to Law, Mr. Hatfield had been involved with management and training of project engineers, consulting with a broad spectrum of clients and the development of special analytical services for the laboratory, Materials Analytical Services. Working closely with Dr. Longo and the other microscopists, Mr. Hatfield shared his procedures and experience to further develop analytical testing services for building evaluation and property damage litigation.

Mr. Hatfield's knowledge and experience has been sought to further many other's education in dealing with asbestos-related problems. In addition to lecturing, Mr. Hatfield has twice taught the NIOSH Course No. 582, "Sampling and Evaluating Airborne Asbestos Dust" for the University of Alabama in Birmingham, and was appointed as an expert advisor to EPA's negotiated rule-making committee to promulgate new regulations for asbestos in schools. These regulations are known as the Asbestos Hazard Emergency Response Act (AHERA) regulations. Additionally, Mr. Hatfield has participated in the U.S. EPA's Peer Review of research projects.

Richard L. Hatfield
Page 3

PUBLICATIONS AND PRESENTATIONS

Hatfield, R.L., Krewer, J A., and Longo, W.E., "A Study of the Reproducibility of the Micro-Vac Technique as a Tool for the Assessment of Surface Contamination in Buildings with Asbestos Containing Materials" (M.E. Beard and H.L. Rook) in Advances in Environmental Measurement Methods for Asbestos, ASTM #STP 1342,301, January 2000.

Keyes, D. L., Chessan, J., Ewing, W. M., Faas, J. C., Hatfield, R. L., Hayes, S. M., Longo, W. E. and Millette, J. R. "Exposure to Airborne Asbestos Associated with Simulated Cable Installation Above and Suspended Ceiling" Am. Ind. Hyg. Assoc. J. (52) Nov. 1991

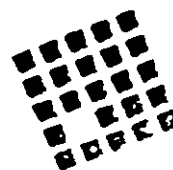
Keyes, D. L., Chessan, J., Hayes, S. M., Hatfield, R. L., Ewing, W. M., Longo, W. E. and Millette, J. R. "Re-Entrainment of Asbestos from Dust in a Building with Acoustical Plaster" Environmental Choice, Technical Support, Volume I, (6), 1992.

Ewing, W. M., Chesson, J., Dawson, T. A., Ewing, E. M., Hatfield, R. L., Hays, S. M., Keyes, D. L., Longo, W. E., Millette, J. R., and Spain, W. H. "Asbestos Exposure During and Following Cable Installation in the Vicinity of Fireproofing" Environmental Choices Technical Supplement, Volume I, (2), 1993.

PROFESSIONAL MEMBERSHIPS

- 1) American Industrial Hygiene Association
- 2) ASTM D-22 Committee
- 3) Environmental Information Association
- 5) National Institute of Building Sciences

B



**MATERIALS
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ANALYSIS OF ZONOLITE ATTIC INSULATION

Submitted to:

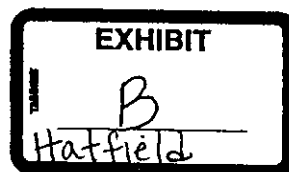
J. Conard Metcalf

Williams & Trine

September 10, 1993

**By: Sean Fitzgerald
William E. Longo, Ph.D.**

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2406 Blue Ridge Road • Suite 105
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(404) 448-3200 • FAX (404) 365-1



**MATERIALS
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MICROANALYSIS PROJECT REPORT

CLIENT:	J. Conard Metcalf	DATE:	July 26, 1993
INSTITUTION:	Williams & Trine, P.C.	PREPARATION BY:	Sean Fitzgerald
PROJECT:	Zonolite Product Analysis	ANALYSIS BY:	Sean Fitzgerald
MAS NO.:	M7099-1	P.O. NUMBER:	N/A

SUMMARY: The objective of this study was to determine the presence or absence of tremolite/actinolite asbestos in Zonolite Attic Insulation that was manufactured by W.R. Grace.

DESCRIPTION: In August of 1991, Materials Analytical Services, Inc. (MAS) received one 12 pound bag labeled "Zonolite Attic Insulation, All Mineral Vermiculite", as a known reference material. In July of 1993, the Zonolite Attic Insulation was retrieved from the MAS archive storage room and analyzed by optical microscopy, scanning electron microscopy (SEM) and transmission electron microscopy (TEM).

PREPARATION AND ANALYSIS: After removing a random sample of the vermiculite for testing, the zonolite bag was photographed front and back as shown in figures 1 and 2. The Zonolite bag was essentially received in our laboratory in an unopened condition, but due to the deterioration of the plastic over time, the Zonolite bag fell apart during handling for the photography and had to be re-constructed. The remaining loose vermiculite material (figure 3), was placed in a large plastic specimen bag for storage. The removed sub-sample of vermiculite was inspected with an Olympus SZ Zoom Stereo Microscope at magnifications from 7X to 40X, as shown in figures 4 and 5. In one of the vermiculite pellets, a fibrous grayish mineral was observed associated with the vermiculite material as shown by the arrows in both figures 4 and 5. Samples of the vermiculite material were then prepared for both SEM and TEM.

The SEM preparation was performed by placing one of the vermiculite pellets containing the associated fibrous mineral onto a SEM stub with double-sided carbon tape and carbon paint. The sample was then carbon-coated in a Hitachi Vacuum Evaporator. The SEM analysis was performed using a Hitachi S-800 Field Emission SEM with a Tracor Northern EDXA system. The SEM photomicrographs shown in figures 6 through 11 further show the fibrous mineral intergrowth in between the vermiculite leaves for that particular sample. The EDXA spectra of the fibrous mineral was consistent with tremolite-actinolite (see figures 12 and 13).



J. Conard Metcalf
Page 2

The TEM preparation of the vermiculite sample was performed by suspending between 10 - 30 mg of the fine vermiculite dust fraction in reagent alcohol that was then filtered onto a 0.2 μ m polycarbonate (PC) filter. The filter was dried, carbon coated, and a section of the filter was placed on a 200 mesh TEM grid. The PC filter material was dissolved in a chloroform Jaffe washer and the final TEM prep was examined in a JEOL 1200 EX II TEM. The TEM photomicrographs in figures 14 and 16 show that the tremolite-actinolite structures found had an aspect ratio greater than 3:1, and therefore can be classified as an asbestiform structure as specified by current Federal regulations. A Tracor Northern system was used to obtain EDXA spectra, as shown in figure 18, and a selected area electron diffraction (SAED) pattern was recorded as shown in figure 17. The EDXA and SAED information was used to positively identify the fibrous mineral found in the vermiculite samples as asbestiform tremolite-actinolite.

DISCUSSION AND CONCLUSION

It is well known that in some areas of the country where vermiculite where vermiculite deposits are found, asbestiform tremolite-actinolite can also be found as an associated mineral. However, there has been some suggestion that during the processing of the vermiculite ore at the manufacturing plant, the asbestiform tremolite-actinolite is somehow removed and the final vermiculite product that is then sold to the consumer, is tremolite-actinolite free.

This study was designed to test that theory by taking a known sample of a processed vermiculite product (Zonolite Attic Insulation as manufactured by W.R. Grace), and determine if it contained asbestiform tremolite-actinolite.

Our analysis showed that there was tremolite-actinolite found in with the vermiculite in the Zonolite Attic Insulation product (figures 5 through 11). The tremolite-actinolite was found both associated with vermiculite and as free respirable fibers in the fine dust as shown in figures 14 through 16.

It is therefore our conclusion that the tremolite-actinolite does remain associated with the vermiculite after the ore is fully processed and can be found with the finished product, as demonstrated with the W.R. Grace Zonolite Attic Insulation.

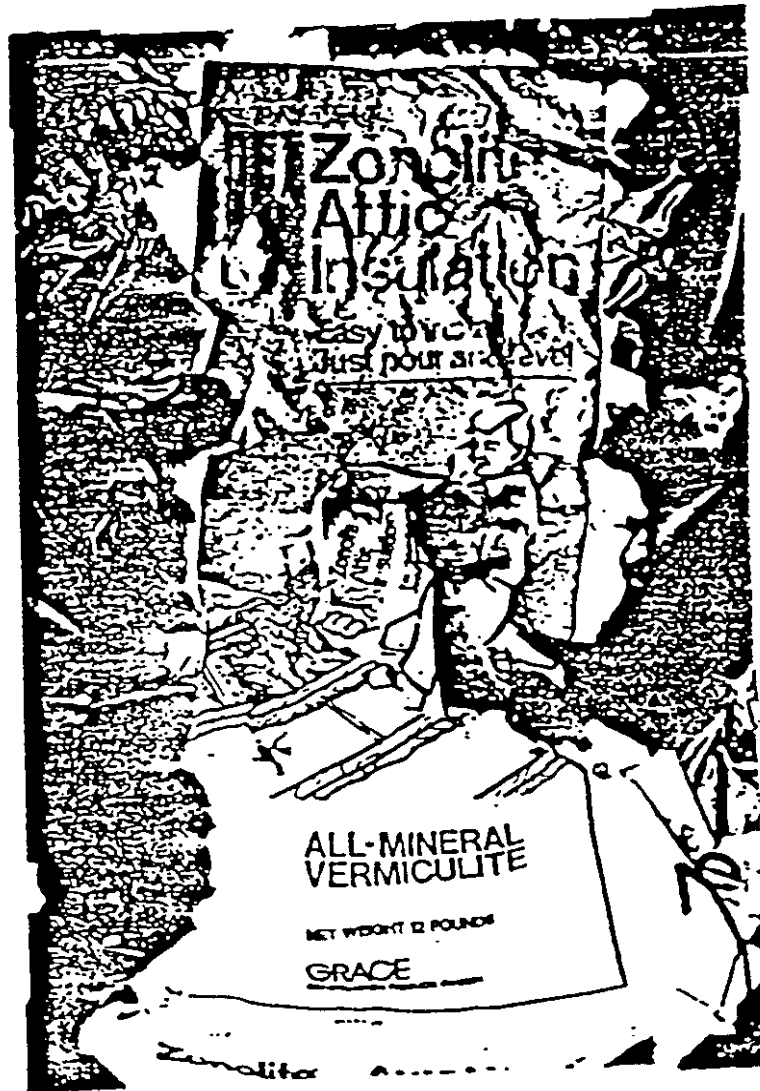


FIGURE 1

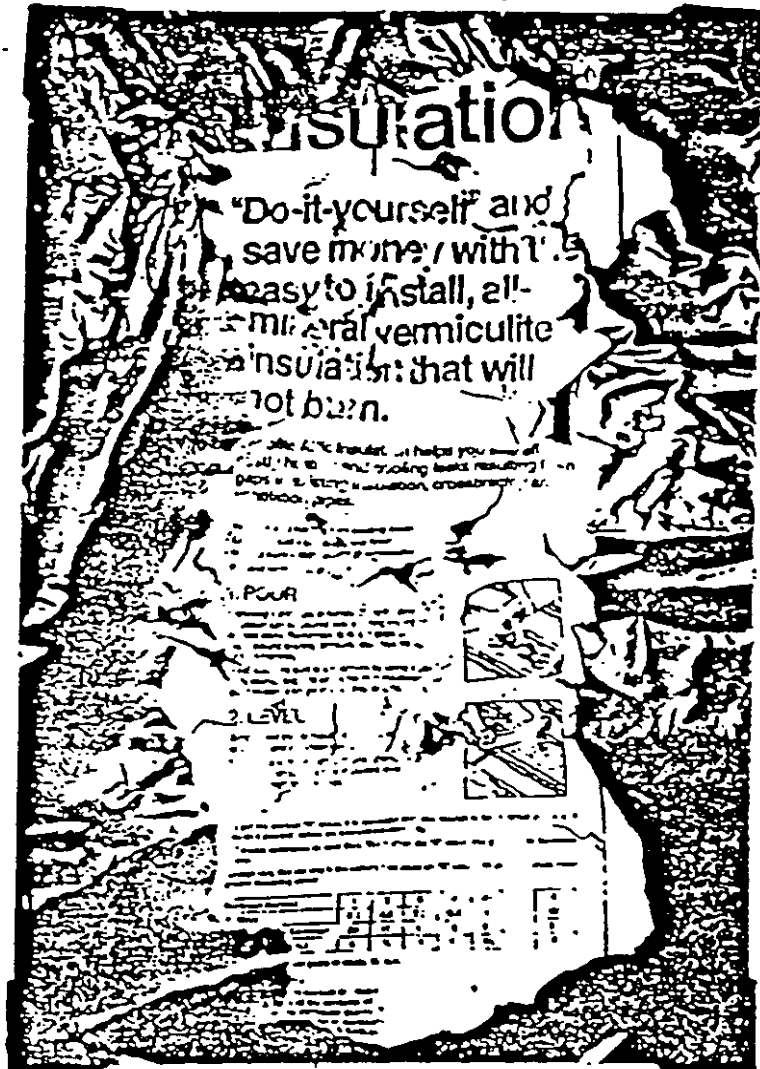


FIGURE 2

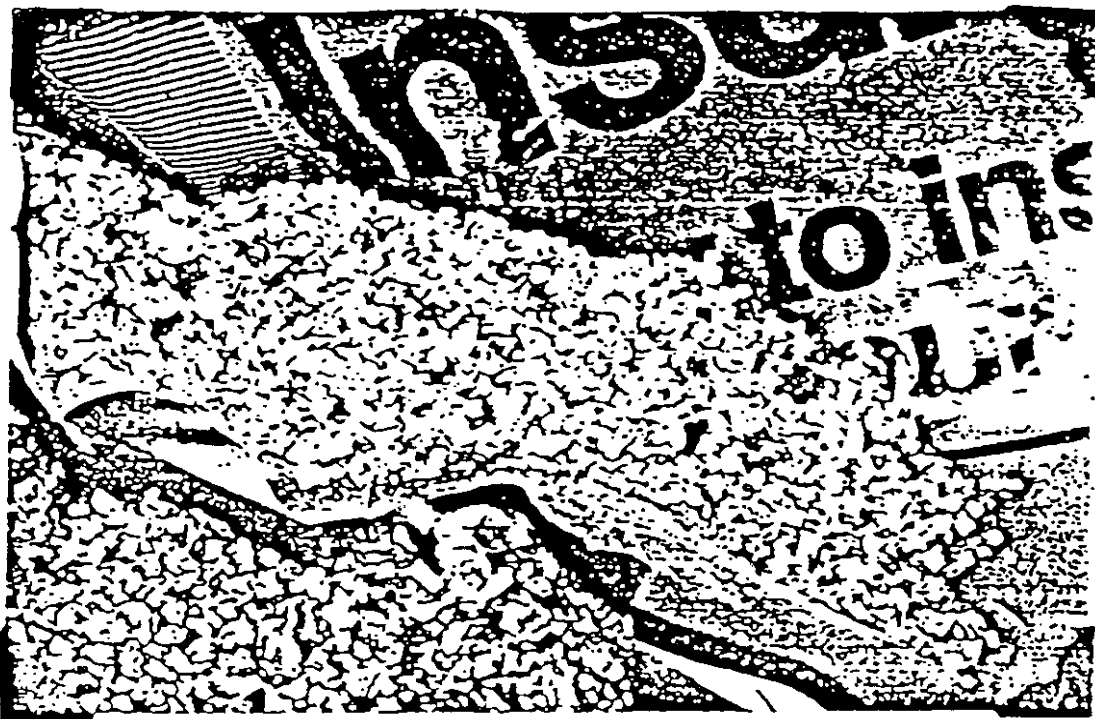


FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8



FIGURE 9

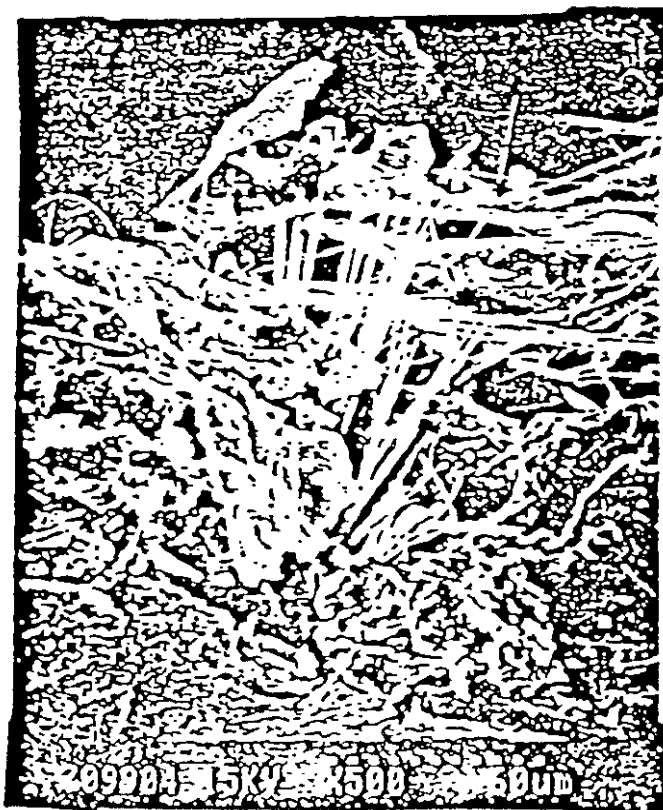


FIGURE 10



FIGURE 11

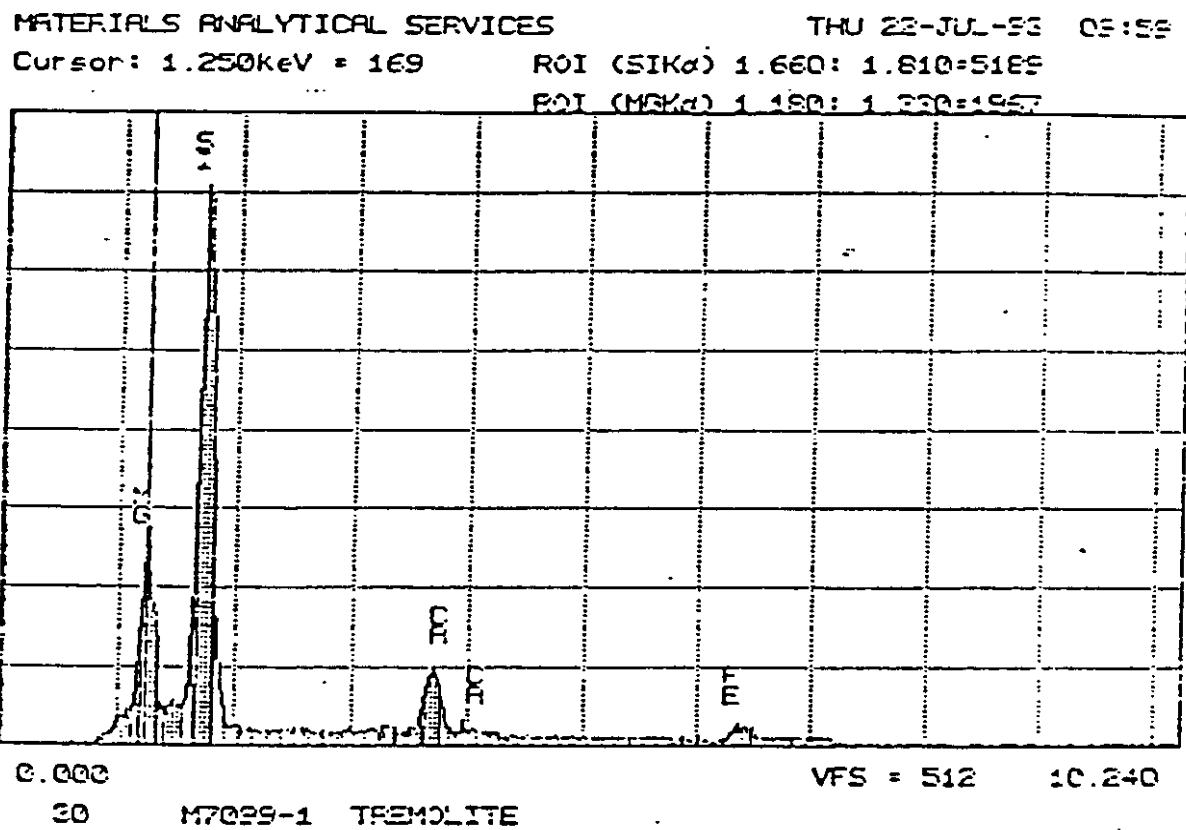


FIGURE 12

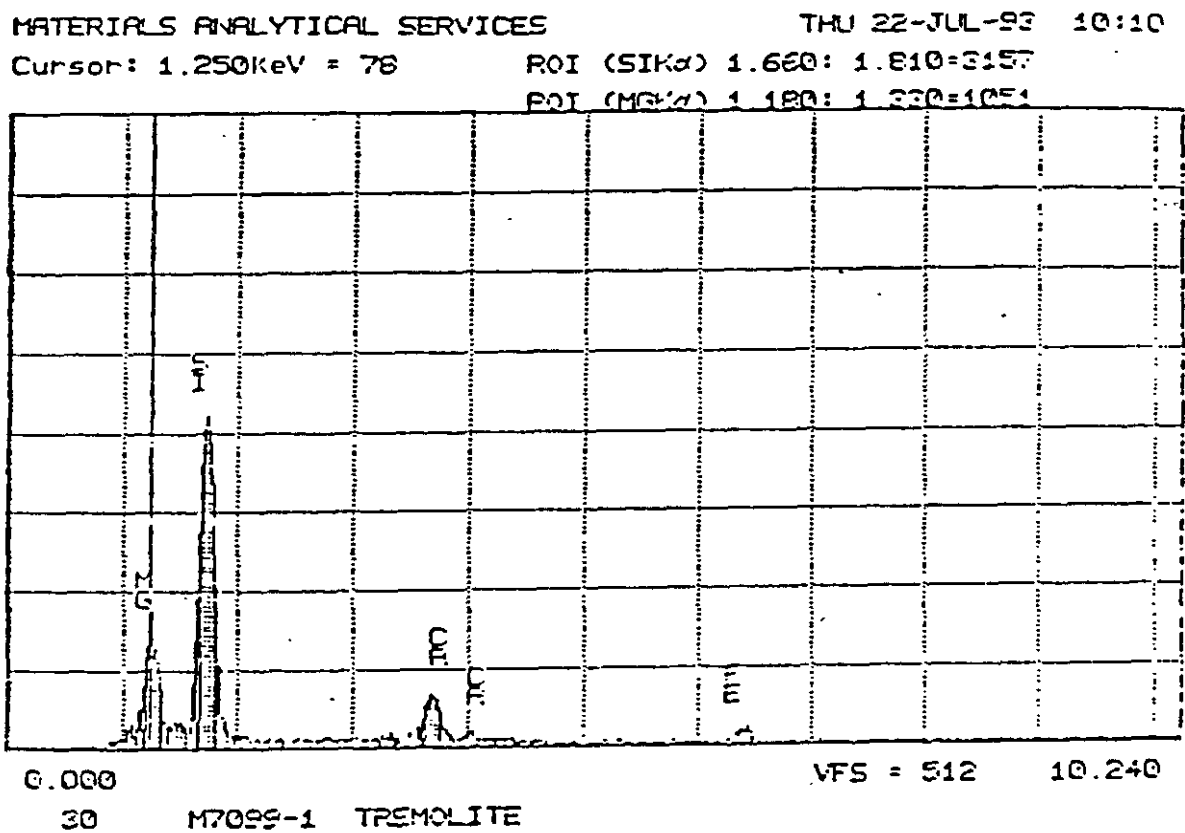


FIGURE 13



FIGURE 14



FIGURE 15



FIGURE 16

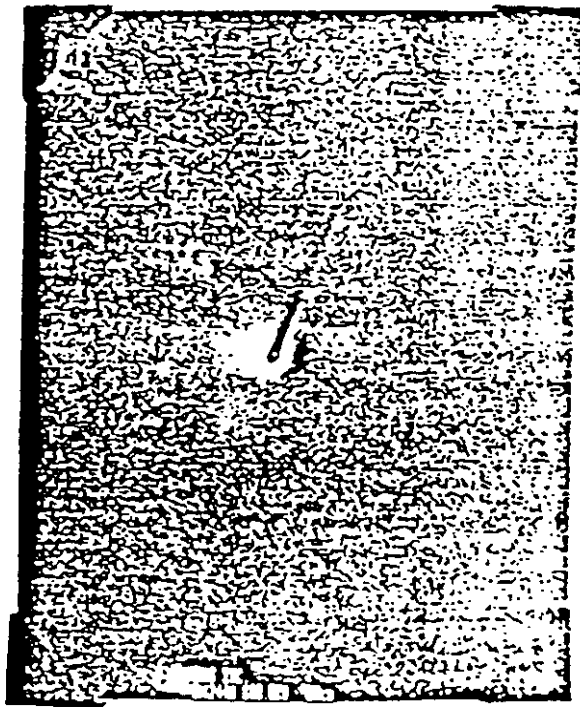


FIGURE 17

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MATERIALS ANALYTICAL SERVICES, INC.
3945 LAKEFIELD COURT
SUWANEE, GEORGIA 30024
(770) 866-3200



Client Name: McGarvey, Heberling, Sullivan & McGarvey, P.C.

Client Job Number / Name: Vermiculite Samples from Libby, Montana: Various Locations

MAS Project Number: M22964

Date: February 10, 2000

Analytical Protocol: EPA document 600/R-93/116, "Method for the Determination of Asbestos in Bulk Building Materials"

CLIENT SAMPLE NUMBER	MAS SAMPLE NUMBER	LOCATION	MATERIAL	ASBESTOS ANALYSIS
#1	M22964-001	214 Colorado Ave	Raw ore	Actinolite/Tremolite Present
#2	M22964-002	214 Colorado Ave	Milled ore	Actinolite/Tremolite Present
#3	M22964-003	35 McKay Ave	Attic insulation	Actinolite/Tremolite Present
#4	M22964-004	3724 Hwy 2 South	Attic insulation	Actinolite/Tremolite Present
#5	M22964-005	106 Voves Ave	Attic insulation in garage	Actinolite/Tremolite Present
#6	M22964-006	1406 Utah Ave	Attic insulation	Actinolite/Tremolite Present
#7	M22964-007	Vacant rental Nevada St	Attic insulation	Actinolite/Tremolite Present
#8	M22964-008	512 W. 6 th	Attic insulation	Actinolite/Tremolite Present
#9	M22964-009	310 E. 5 th	Attic insulation	Actinolite/Tremolite Present
#10	M22964-010	1020 California St	Attic insulation	Actinolite/Tremolite Present
#11	M22964-011	2261 Hwy 2 South	Unused vermiculite insulation taken from factory packaged bag	Actinolite/Tremolite Present
#12	M22964-012	347 Voves Ave	Attic insulation	Actinolite/Tremolite Present
#13	M22964-013	226 Spencer Rd, from opening in wall	Wall insulation	Actinolite/Tremolite Present

Raleigh Office:
 6 Hutton Street • Suite 101
 Raleigh, NC 27606

EXHIBIT

C
 Hatfield

Atlanta Office:
 3945 Lakefield Court
 Suwanee, Georgia 30024

D

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Materials Analytical Services, Inc.
3945 Lakefield Court
Suwanee, GA 30024
(770) 866-3200

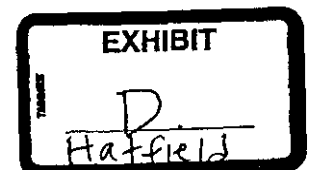
**Summary of Microvac Dust Analysis by
Transmission Electron Microscopy (TEM)**

Date: February 10, 2000
Client Name: McGarvey, Heberling, Sullivan & McGarvey, P.C.
Client Job Number/Name: Libby, MT
MAS Project Number: M22963

Reviewer: _____

<u>Client Sample Number</u>	<u>MAS Sample Number</u>	<u>Sample Location</u>	<u>Number of Asbestos Structures</u>	<u>Asbestos Concentration Str/ft²</u>	<u>Asbestos Concentration Str/Cm²</u>
1	001	Mason, Walter - Dust sample #1 from floor of attic apartment storage area (2 x 38 cm)	8	32.7 million	35.2 thousand
2	002	Mason, Walter - Dust sample #2 from unused rolled sheet metal ducting surface (10 x 10 cm)	11	10.2 million	10.9 thousand
3	003	Spencer, Shelly - Dust sample #3 light dust taken from top of wooden closet shelf from children's bedroom (13 x 12 cm)	2	399.7 thousand	430.3
4	004	Spencer, Shelly - Dust sample #4 medium dust taken from surface of plastic covered cardboard child's game on closet shelf (15 x 8 cm)	5	6.4 million	6.9 thousand
5	005	Spencer, Shelly - Dust sample #5 heavy dust taken from wooden support ledger of closet shelf (4 x 18 cm)	4	17.3 million	18.6 thousand
6	006	Walker, Diane - Dust sample #6 taken from walkboards in attic including crushed vermiculite where homeowner routinely travels when working in attic (10 x 10 cm)	13	41.1 million	44.2 thousand
7	007	Walker, Diane - Dust sample #7 taken from two wooden lips of attic access hatch when in open position into bedroom (2 x 28 cm)	13	22.8 million	24.6 thousand

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TEM DUST ANALYSIS**M22963 001**

McGarvey, Heberling, Sullivan & McGarvey

Client Sample ID: 1

Sample Area/ Volume: 76 cm2

Filter Type: MCE 47mm

Pore size: 0.45

Effective Filter Area: 1297

Sample type: Dust

Analysis type: Dust

Grid Acceptance YES 30 %

Date Analyzed: 2/4/00

Analyst: William Stark

Scope Number: 3

Accelerating Voltage: 100 KV

Indicated Mag: 25 KX

Screen Mag: 20 KX

Grid box: 5674

Str < 5um: 4

Number of grids: 2

#1: 114

#3: 112

Average Grid Size: 0.012934

Str ≥ 5um: 4

Number of openings: 10

#2: 114

#4: 115

Total Area Analyzed: 0.129

Total Str: 8

Volume Filtered 3 ml

Str / sq ft 3.268E+07

Str / cm2 3.517E+04

Dilution Factor 33.33333

Str / sq ft ≥ 5 1.634E+07

Str / cm2 ≥ 5 1.759E+04

Str:	SquareID:	Type:	Structure:	Length	Width	Morph:	SAED:	EDS:
1	D4-G7	AC	M-B	24.00	1.00	X	X	Print Out
	P9		NSD					
2	D6	TR	M-B	4.50	0.60	X	X	Print Out
	C10		NSD					
3	A6	AC	M-B	13.00	1.00	X	X	
4	A6	AC	M-B	5.50	0.20	X	X	
5	D5-A2	C	M-F	1.20	0.02	X	X	Print Out
	C4		NSD					
6	G3	AC	F	5.40	0.20	X	M23330	
7	G3	AC	F	2.30	0.15	X	X	
8	I6	TR	M-F	4.00	0.30	X	X	

M22963 001 Sample Comments:

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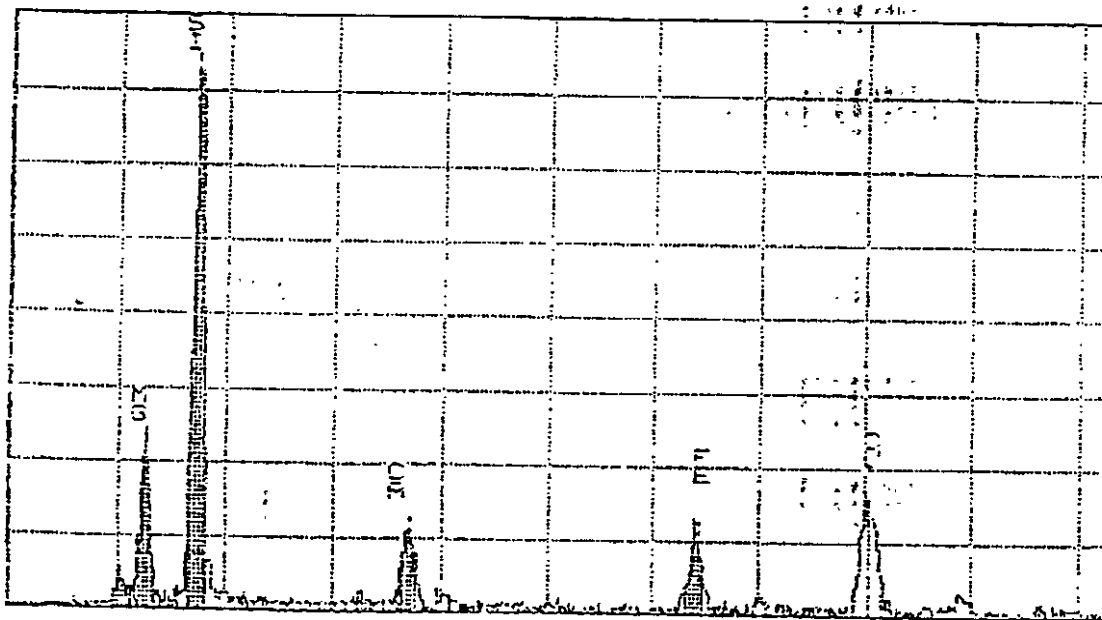
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MATERIALS ANALYTICAL SERVICES

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ROI (SIKα) 1.550: 1.820=1239



0 000

VFS = 255 10.240

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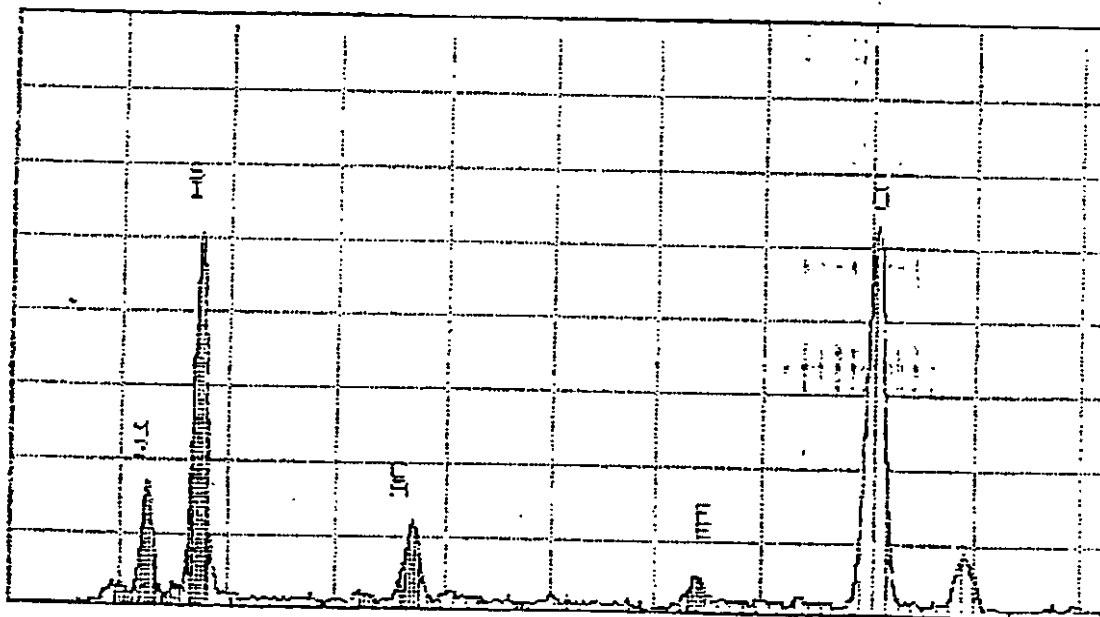
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MATERIALS ANALYTICAL SERVICES

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ROI (SIKα) 1.650: 1.625: 492



0.020

VFS = 126 10.240

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M22963-001; TREMOLITE EDS

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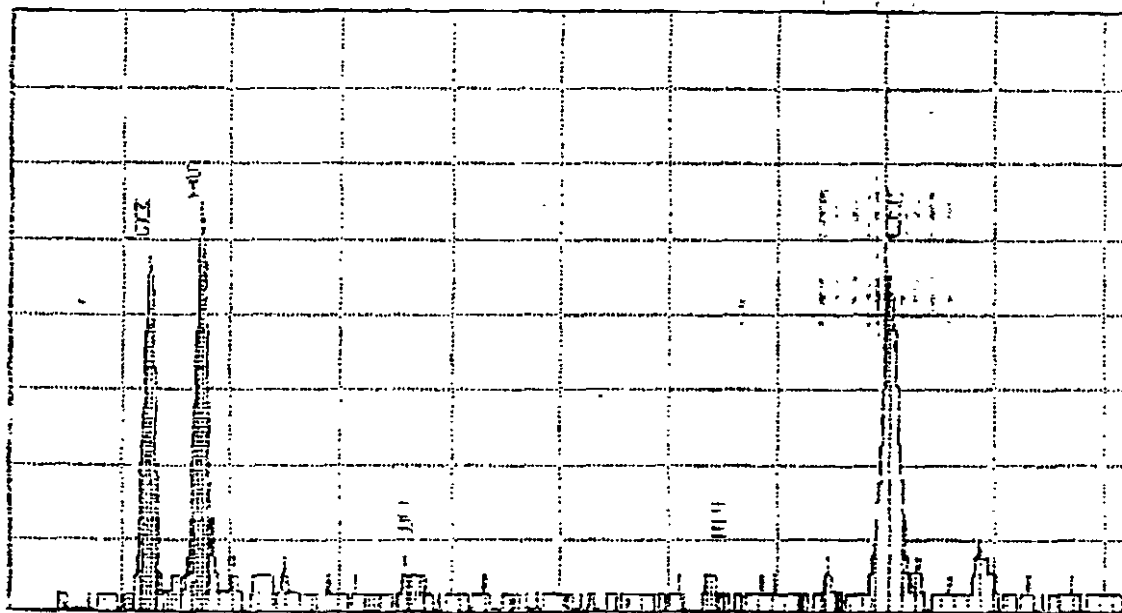
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MATERIALS ANALYTICAL SERVICES

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ROI (SIKd) 1 650: 1.620=124



0.000

VFE = 32

10.240

33

M22963-001: CHRYSOTILE EDS

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TEM DUST ANALYSIS**M22963 002****McGarvey, Heberling, Sullivan & McGarvey**

Client Sample ID: 2

Sample Area/ Volume: 100 cm²

Filter Type: MCE 47mm

Pore size: 0.45

Effective Filter Area: 1297

Sample type: Dust

Analysis type: Dust

Grid Acceptance YES 25 %

Date Analyzed: 2/4/00

Analyst: Al Harmon

Scope Number: 2

Accelerating Voltage: 100 KV

Indicated Mag: 25 KX

Screen Mag: 20 KX

Grid box: 5674

Str < 5um: 6

Number of grids: 2 #1: 114 #3: 114

Average Grid Size: 0.012996

Str ≥ 5um: 5

Number of openings: 10 #2: 114 #4: 114

Total Area Analyzed: 0.130

Total Str: 11

Volume Filtered 10 ml

Dilution Factor 10

Str / sq ft 1.020E+07

Str / cm² 1.098E+04

Str / sq ft ≥ 5 4.636E+06

Str / cm² ≥ 5 4.990E+03

Sq#	SquareID	Type	Structure	Length	Width	Morph	SAED	EDS
1	B4-G3	AN	M-F	6.00	0.30	X	X	Print Out
2	E2	AN	M-F	10.00	0.50	X	X	X
3	E2	AN	F	4.00	0.20	X	X	X
4	E2	AN	F	1.00	0.10	X	X	X
5	E2	TR	F	8.00	0.30	M24342	X	Print Out
6	C5	AN	M-F	12.00	0.50	X	X	X
	B8		NSD					
7	C9	AN	F	2.00	0.20	X	X	X
8	B5-B9	AN	M-F	18.00	0.50	X	X	X
9	B6	AN	M-F	4.00	0.30	X	X	X
	D9		NSD					
10	F10	AN	F	4.00	0.20	X	X	Print Out
11	J6	AN	F	3.00	0.20	X	X	X

M22963 002 Sample Comments:

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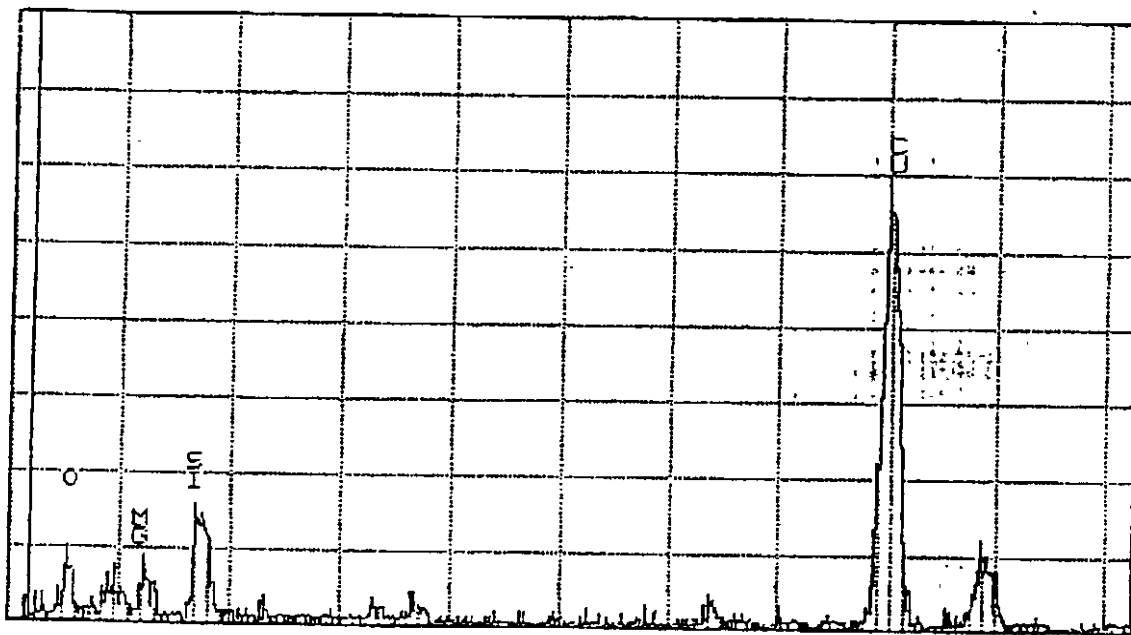
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MATERIALS ANALYTICAL SERVICES

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M22963-002; ANTHOPHYLLITE

VF5 = 128 10.240

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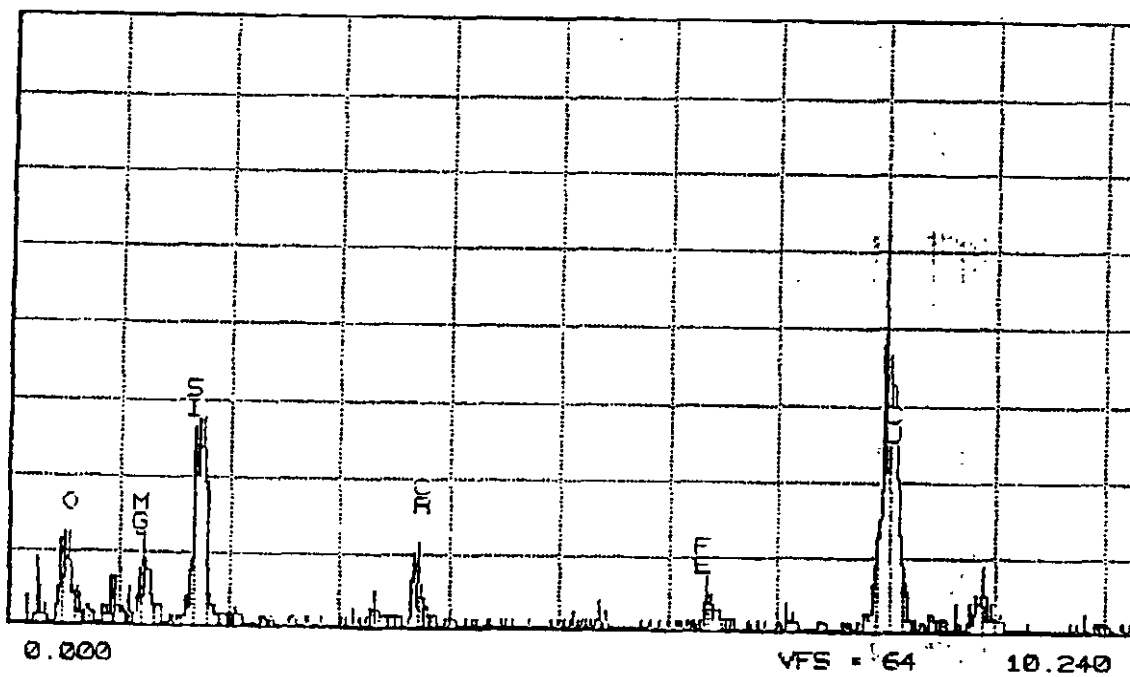
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M22963-002; TREMOLITE/ACTINOLITE

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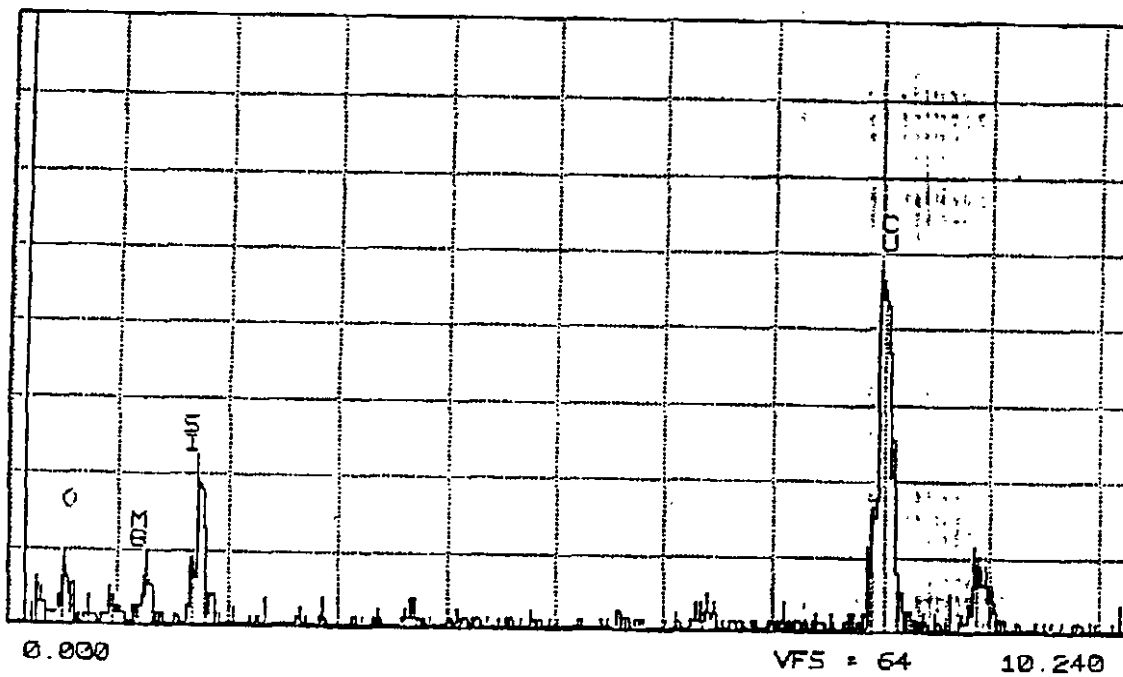
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MATERIALS ANALYTICAL SERVICES

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7 M22963-002; ANTHOPHYLLITE

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TEM DUST ANALYSIS**M22963 003****McGarvey, Heberling, Sullivan & McGarvey**

Client Sample ID: 3

Sample Area/ Volume:	156 cm2	Date Analyzed:	2/4/00
Filter Type:	MCE 7mm	Analyst:	Al Hamon
Pore size:	0.45	Scope Number:	2
Effective Filter Area:	1287	Accelerating Voltage:	100 KV
Sample type:	Dust	Indicated Mag:	25 KX
Analysis type:	Dust	Screen Mag:	20 KX
Grid Acceptance	YES 15 %	Grid box:	5674

Str < 5um:	0	Number of grids:	2	#1:	114	#3:	113	Average Grid Size:	0.012883
Str ≥ 5um:	2	Number of openings:	10	#2:	114	#4:	113	Total Area Analyzed:	0.129
Total Str:	2								

Volume Filtered	30 ml	Str / sq ft	3.997E+05	Str / cm2	4.303E+02
Dilution Factor	3.333333	Str / sq ft ≥ 5	3.997E+05	Str / cm2 ≥ 5	4.303E+02

Str:	SquareID:	Type:	Structure:	Length	Width	Morph:	SABD:	EDS:
	A1-B7		NSD					
	G3		NSD					
	D3		NSD					
	A3		NSD					
1	C6	AN	F	6.00	0.30	X	X	Print Out
	A2-D3		NSD					
	B5		NSD					
	D8		NSD					
	C9		NSD					
2	B6	AN	F	8.00	0.40	X	X	X

M22963 003 Sample Comments:

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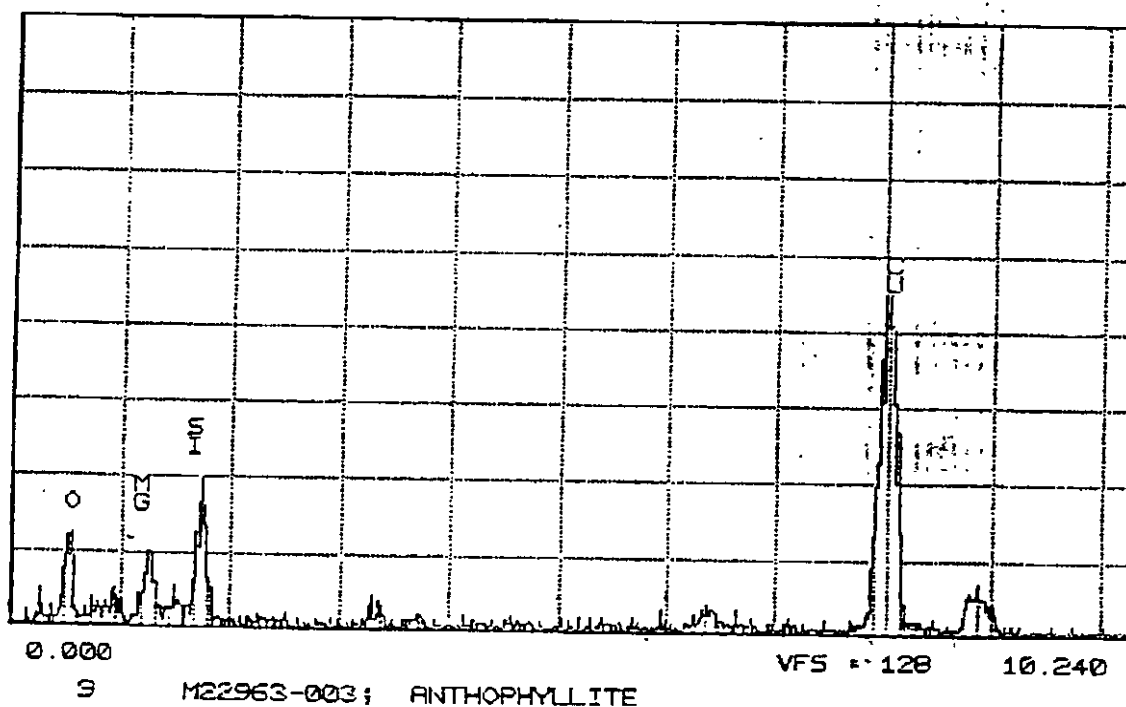
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MATERIALS ANALYTICAL SERVICES

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TEM DUST ANALYSIS**M22963 004****McGarvey, Heberling, Sullivan & McGarvey**

Client Sample ID: 4

Sample Area/ Volume:	120 cm ²	Date Analyzed:	2/4/00
Filter Type:	MCE 47mm	Analyst:	Al Harmon
Pore size:	0.45	Scope Number:	2
Effective Filter Area:	1297	Accelerating Voltage:	100 KV
Sample type:	Dust	Indicated Mag:	25 KX
Analysis type:	Dust	Screen Mag:	20 KX
Grid Acceptance	YES 15 %	Grid Box:	5674

Str < 5um:	4	Number of grids:	2	#1:	114	#3:	114	Average Grid Size:	0.012996
Str ≥ 5um:	1	Number of openings:	10	#2:	114	#4:	114	Total Area Analyzed:	0.130
Total Str:	5								

Volume Filtered 6 ml
Dilution Factor 16.66667

Str / sq ft	6.499E+06	Str / cm ²	6.931E+03
Str / sq ft ≥ 5	1.288E+06	Str / cm ² ≥ 5	1.386E+03

Sq#	SquareID	Type	Structure	Length	Width	Morph	SAED	EDS
	E1-G8		NSD					
	H5		NSD					
	F4		NSD					
	D3		NSD					
	A3		NSD					
1	D1-B6	AN	F	3.00	0.20	X	X	Print Out
	C4		NSD					
2	F3	AN	F	4.00	0.20	M24343	X	X
	H5		NSD					
3	G7	AN	F	2.00	0.20	X	X	Print Out
4	G7	AN	F	15.00	0.50	X	X	X
5	G7	AN	F	4.00	0.30	X	X	X

M22963 004 Sample Comments:

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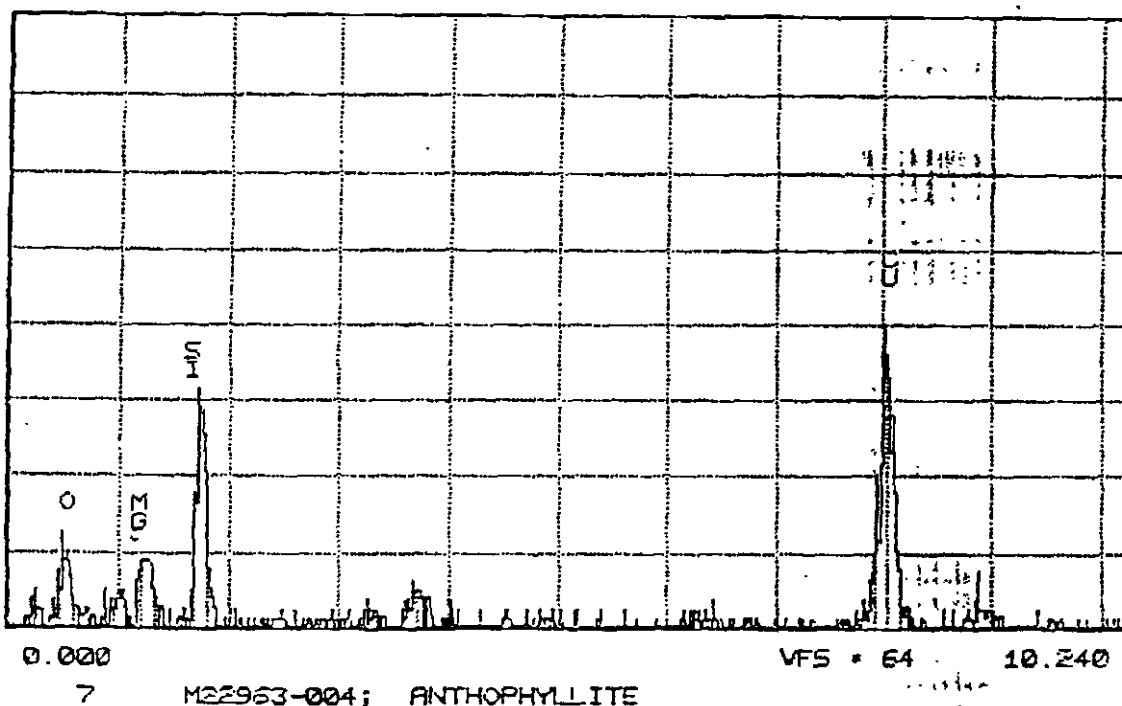
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MATERIALS ANALYTICAL SERVICES

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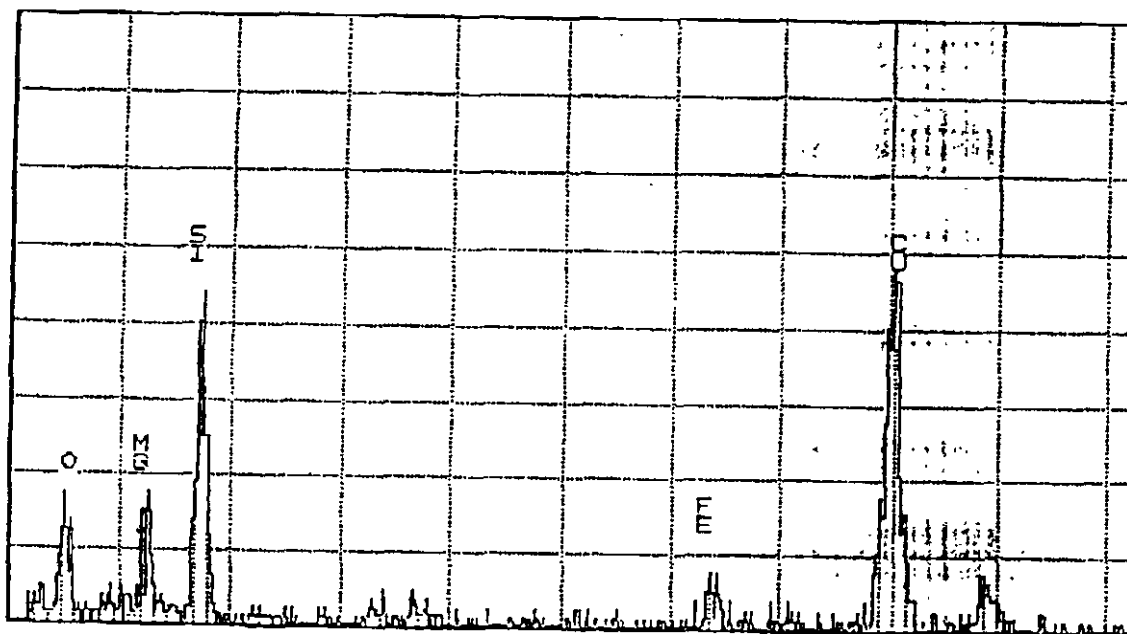
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MATERIALS ANALYTICAL SERVICES

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0.000

6

M22963-004; ANTHOPHYLLITE

VFS = 64 10.240

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